

CLAIMS

1. A method of growing cells, which method has multiple applications, in particular to the maintenance, proliferation, amplification or differentiation of cells in a closed enclosure (10), and consists of introducing cells into said enclosure, delivering to said enclosure ventilation gases, nutrient media and growth factors, and harvesting the cultivated cells, characterized in that it further consists of:

- providing multiple sources (28) of different nutrient media or constituents and multiple sources (34) of different growth factors,

- determining compositions and flow rates of mixtures of the different nutrient media or constituents and compositions and flow rates of mixtures of the different growth factors corresponding to an envisaged application, and then

- during the progress of said application, modifying at regular or irregular intervals the compositions and/or the flow rates of the mixtures of nutrient media or constituents and the mixtures of growth factors delivered to the enclosure (10), which modifications can be effected independently of each other.

2. A method according to claim 1, characterized in that it further consists of providing a plurality of different gases, determining a composition and a flow rate of a mixture of the different gases corresponding to said envisaged application, delivering said gas mixture to the enclosure (10) and, if necessary, and at regular or irregular intervals, modifying the composition and/or the flow rate of the gas mixture delivered to the enclosure.

3. A method according to claim 1, characterized in

that it further consists of periodically or non-periodically testing the development of the cells in said enclosure (10) as the aforementioned application proceeds and modifying said compositions and/or flow rates as a function of the results of said tests.

4. A method according to claim 1, characterized in that nutrient medium is delivered to the enclosure (10) continuously or discontinuously.

5. A method according to claim 1, characterized in that the aforementioned cells are hematopoietic cells.

6. A device for growing cells, which device has multiple applications, in particular to the maintenance, proliferation, amplification or differentiation of cells, and includes a closed enclosure (10), microporous membranes (14) delimiting a growth chamber (12) in said enclosure, means (44) for delivering cells to said chamber, means for delivering ventilation gases, nutrient media and growth factors to the enclosure, and means (44) for harvesting cells, characterized in that it further includes containers (28) of different nutrient media or constituents connected by flow rate adjustment means (30) to a delivery manifold (32) of said enclosure, containers (34) of different growth factors connected by flow rate adjustment means (36) to another delivery manifold or the same delivery manifold (38, 32) of the enclosure, and means (52) for controlling the aforementioned adjustment means (30, 36) to determine, as a function of an envisaged application, the composition and/or the flow rate of a mixture of nutrient media and the composition and/or the flow rate of a mixture of growth factors delivered to the enclosure via said delivery manifold or manifolds and to modify said compositions and/or said flow rates as said application proceeds.

7. A device according to claim 6, characterized in that said manifold or manifolds (32, 38) are connected to said enclosure (10) by a degassing and temperature adjustment chamber (50).

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8. A device according to claim 6, characterized in that it includes containers (24) for different gases, flow rate adjustment means (26) connecting said containers to a delivery manifold (18) of said enclosure, and means (50) for controlling the adjustment means (26) to determine the composition and the flow rate of a gas mixture delivered to said enclosure as a function of the envisaged application and to modify said composition and/or said flow rate if necessary as the application proceeds.

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9. A device according to claim 6, characterized in that said cells are hematopoietic cells.

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